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DATE: October 16, 1992

REF: ARCS Contract No. 68-W9-0025
ARCS Work Assignment No. WA-29-6JZZ

SUBJ: Preliminary Assessment
Westbank Asbestos; Marrero, Westwego and Harvey; Jefferson Parish; Louisiana
LAD985170711

Attached is the Preliminary Assessment for Westbank Asbestos located in Marrero, Westwego and Harvey, Jefferson Parish, Louisiana.

PRELIMINARY ASSESSMENT

of

WESTBANK ASBESTOS

(LAD985170711)

Prepared By

S. Bret Kendrick, Task Manager

**ICF Technology, Inc.
Region 6**

October 16, 1992

000227

**PRELIMINARY ASSESSMENT
of
WESTBANK ASBESTOS**

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1.0 INTRODUCTION

The Region 6 ARCS contractor, M-K Environmental and ICF Technology, Inc. (MK/ICF), was tasked by the U.S. Environmental Protection Agency (EPA) under ARCS Contract No. 68-W9-0025 and Work Assignment No. WA-29-6JZZ to conduct the Preliminary Assessment (PA) of Westbank Asbestos (LAD985170711) in Jefferson Parish, Louisiana.

The purpose of a PA is to determine whether further investigations are warranted and to provide a preliminary screening of sites to facilitate EPA's assignment of site priorities.

The PA investigation focuses on determining CERCLA eligibility, reviewing available file information, documenting the presence and type, or absence of uncontained or uncontrolled hazardous substances on site and collecting area receptor and site characteristic information.

2.0 SITE DESCRIPTION AND OPERATIONAL HISTORY

This section addresses operational history, waste containment, hazardous substance identification and regulatory status of the facility.

2.1 SITE LOCATION

The site is the neighborhood surrounding the Johns-Manville (JM) plant, located on the west bank of the Mississippi River across from New Orleans in Marrero, Jefferson Parish, Louisiana (Figure 1). The site is comprised of numerous driveways and rights-of-way upon which asbestos-containing waste material containing up to sixty percent asbestos has been laid (Ref. 1; Ref 18, p. 7, 8, 9). The site covers approximately 650 acres or approximately 1 square mile (Ref. 17). The geographical coordinates of the estimated boundaries of the site (Figure 1) are as follows:

Northwest	29°54'33"	90°08'45"	Northeast	29°53'55"	90°06'06"
Southwest	29°54'02"	90°09'32"	Southeast	29°53'40"	90°06'02"

2.2 OPERATIONAL HISTORY

The Johns-Manville facility is located on the west bank of the Mississippi River across from New Orleans. Between 1955 and 1965, the plant produced various types of asbestos containing products with the principle product being asphalt roofing material. An asbestos containing material by-product was generated by the plant. The by-product, in aggregate form, was pulverized in a hammer mill and mixed with filler to form a stable roadbed-like material. The asbestos containing aggregate was offered to local residents for driveway construction at no charge (Ref 19, p. 2). Consequently, many driveways and rights-of-way in the surrounding neighborhood contain this waste material (Ref. 1).

The area investigated during the ARCS MK/ICF January 7, 1992 reconnaissance was limited to the neighborhood bounded by Baratara Boulevard, Westbank Expressway, Avenue A

(Westwego) and 4th Street due to time constraints. The actual site area may extend beyond these estimated boundaries.

2.3 REGULATORY STATUS/ACTIVITIES

On January 12, 1990, the Louisiana Department of Environmental Quality (LDEQ) conducted a sampling mission in the Westbank area. The sampling mission included the collection of one air sample using a high volume air sampler and ten bulk samples (Ref 18, p. 1). Analysis of the air sample showed 3×10^{-6} fibers per cubic centimeter (f/cc) which is below the EPA and Occupational Safety and Health Administration (OSHA) action levels of 0.1 f/cc (Ref. 18, p. 10). Analyses of the bulk samples revealed asbestos containing waste material (ACWM) containing up to sixty percent asbestos (chrysotile and crocidolite) (Ref. 18, p. 8, 9).

On February 6, 1990, the LDEQ contacted EPA Region 6 Emergency Response Branch (ERB) for assistance in investigating the potential asbestos health hazard near the Westbank area of New Orleans (Ref. 19, p.1). On this same day, ERB contacted EPA Technical Assistance Team (TAT) to provide technical assistance and resources for addressing the asbestos concerns of LDEQ (Ref. 19, p. 1). TAT conducted drive-by inspections and photodocumentation of the Westbank Asbestos site on February 8, and 9, and March 7, and 8, 1990 (Ref 19, p. 2). On February 23, 1990, TAT met with LDEQ representatives to plan an air sampling mission (Ref. 19, p. 4). Sampling was conducted on March 7, 8, and 9, 1990 at three different locations throughout the Westbank Asbestos site (Ref. 19, p. 5). A total of eleven air samples were collected for analyses. Analytical results of the air sampling conducted revealed all samples to be below detection limit and the established EPA and OSHA action level of 0.1 f/cc (Ref. 19, p. 5, 6).

2.4 WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION

The amount of waste generated and donated to the surrounding neighborhoods is not known. During the MK/ICF reconnaissance inspection, the ACWM was identified in 117 out of 2,514 driveways and rights-of-way in the neighborhood near the defunct Johns-Manville plant (Ref. 1).

The ACWM is dark in color and easily identified (Ref. 1) (Appendix A, Photographs 1-6, 8-10, and 12-13). It is visibly crystalline, friable and deposited directly on the ground surface (Ref. 1). The quantity of ACWM at any one residence was estimated to be from 5 square feet (ft^2) to a maximum of 300 ft^2 (Ref 1). The areal extent of ACWM within the site boundary is estimated to be approximately 17,842.5 square feet (Ref. 29).

3.0 PATHWAY ASSESSMENT

This section characterizes the environmental pathways and associated targets of contaminant migration from the facility.

3.1 GROUND WATER

3.1.1 Ground Water Characteristics

The New Orleans area is situated on low-lying land formed by the deltaic accumulations of the Mississippi River (Ref. 2, p. 3). The area is underlain by natural levee deposits as well as peat and muck deposits, and interdistributary trough fill and tidal deposits (Ref. 2, p. 11 and 12).

The principal aquifer in the New Orleans area is the Gonzales-New Orleans Aquifer (700 foot sand) (Ref. 14, p. 3; Ref. 20, p. 1) which averages 175 feet in thickness (Ref. 20, p. 27). The water yielded by this aquifer is discolored with organic matter and must be treated prior to use (Ref. 20, p. 36). The Gramercy Aquifer (200 foot sand) is a poorly defined series of sand lenses and channel fill material which abruptly thins and thickens (Ref. 20, p. 13). The water obtained from the Norco Aquifer (400 foot sand) in extreme northwestern Jefferson Parish contains less than 250 parts per million (ppm) chloride. It is probable that this aquifer would be satisfactory as a public water supply in this area (Ref. 20, p. 20). The depth to ground water varies from 1 to 4 feet during the months of December through April (Ref 9, p. 20). The net precipitation at the nearest weather station is 19.8 inches (Ref 8).

A release of hazardous substance into ground water is not suspected due to the type of soils and the low mobility potential of the asbestos (Ref. 11).

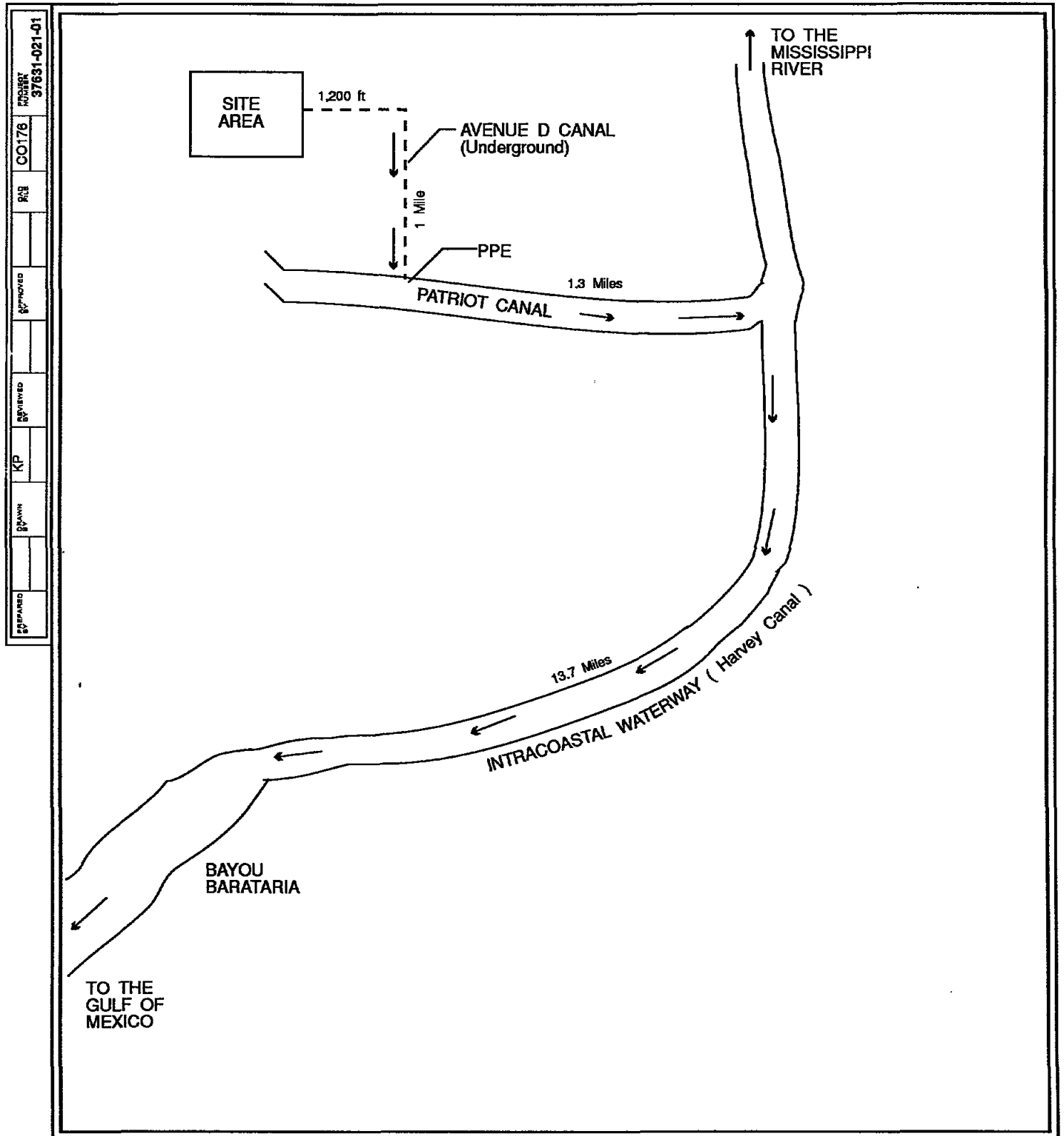
3.1.2 Ground Water Receptors

Ground water within 4 miles of the site is generally utilized for irrigation, industrial purposes and monitoring of underground contaminants (Ref. 10). The location of the closest ground water well to the site is approximately 2 miles north (Ref. 10, p. 25; Ref. 17). No public drinking water wells were identified within 4 miles of the site (Ref. 10; Ref. 21); intakes in the Mississippi River supply drinking water to Jefferson Parish and Orleans Parish (Ref 9, p. 2; Ref 14, p. 3).

3.2 SURFACE WATER

3.2.1 Surface Water Characteristics

The site is located on the west bank of the Mississippi River and is situated in 100-year and 500-year floodplains (Ref. 5). Runoff from the site is directed toward the Avenue D underground canal which is located 1200 ft. east of the site (Ref. 17). Avenue D canal flows one mile south and empties into the Patriot Canal which is a perennial water body and will be considered the probable point of entry (PPE). The Patriot Canal then flows 1.3 miles in an easterly direction until it reaches the pumping station at the junction of Patriot Canal and the Intracoastal Waterway (Harvey Canal No. 1) (Ref. 17). There the water is pumped into the Intracoastal Waterway. The Intracoastal Waterway flows in a southerly direction toward the Gulf of Mexico. The 15 downstream miles end near the town of Barataria (Figure 2) (Ref. 4; Ref. 17).



NOT TO SCALE

FIGURE 2
15 - MILE INSTREAM SEGMENT SKETCH
WESTBANK ASBESTOS
MARRERO, JEFFERSON PARISH, LOUISIANA

CERCLIS #LAD985170711



**SITE LOCATION MAP
WESTBANK ASBESTOS
MARRERO, JEFFERSON PARISH, LOUISIANA**

CERCLIS #LAD985170711



SCALE 1 : 48000



QUADRANGLE LOCATION

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The soils in the site area belong to the Sharkey-Commerce soil association and are characterized by poor drainage, slow percolation and a very slow permeability (Ref. 9, p. 19, 88, 90, 92).

The two year 24-hour rainfall for the New Orleans area is greater than 5.5 inches (Ref. 22). The drainage area is approximately 650 acres or 1 square mile (mi²) (Ref. 17).

3.2.2 Surface Water Receptors

No surface water intakes have been identified along the 15-mile downstream target distance. It is not known if surface water from the 15-mile target distance of the Intracoastal Waterway is used for irrigation, commercial purposes, industrial purposes, recreation or the watering of commercial livestock. In Orleans Parish, all of the water used for public consumption is taken from the Mississippi River which is not part of the 15-mile downstream target distance (Ref. 14, p. 3). The population of Orleans Parish is approximately 557,515 (Ref. 16, p. 30). Jefferson Parish (population of 545,592) also receives much of its water from two water intakes located in the Mississippi River (Ref. 3; Ref. 16, p. 30; Ref. 26).

There are no state or federal parks or wildlife sanctuaries within 15 downstream miles of the PPE (Ref. 17). It is not known if recreational fishing takes place along portions of the 15-mile downstream target segment. There is the potential for the state-protected paddle fish and Pallid sturgeon to reside in the waters throughout this area (Ref. 15). There is a total of 20 miles of wetland frontage along the 15-mile downstream target segment (Ref. 6).

3.3 GROUND WATER RELEASE TO SURFACE WATER

The potential for ground water discharge into surface water exists since the top of the shallowest aquifer is above the bottom of the surface water, and the Mississippi River is located within the 1-mile target distance (Ref. 9, p. 20; Ref. 17).

The contaminant of concern at the site is asbestos. The potential for asbestos to migrate is unlikely due to the fact that mobility of asbestos in ground water is low (Ref. 11). The probable point of entry (PPE) of ground water to surface water is approximately 1,056 ft. based on the shortest straight line distance from Westbank Asbestos to the Mississippi River (Ref. 17). Ground water flow direction is influenced by the Mississippi River, but is generally in a southward direction (Ref. 20).

The cities of Marrero, Harvey, Westwego, Gretna, Waggaman, Avondale, Lafitte, Kenner, and Harahan in Jefferson Parish as well as all of Orleans Parish and St. Bernard Parish are served by water intakes located within the Mississippi River (Ref. 3; Ref. 14, p. 3; Ref. 26; Ref. 27). The population of Jefferson Parish served by surface water is estimated to be approximately 454,592 (Ref. 16, p. 30). The population of Orleans Parish is approximately 557,515 (Ref. 16, p. 30). The population served in St. Bernard Parish is approximately 63,000 (Ref. 27).

There is a potential for the state-protected paddle fish and Pallid sturgeon to reside in the waters throughout this area (Ref. 15). It is estimated that there are less than 10 miles of wetland frontage along the 15-mile downstream target segment of the Mississippi River.

3.4 SOIL EXPOSURE

Asbestos has been positively identified in material used to construct rights-of-way and driveways in the Westbank Area (Ref. 18, p. 17, 18, 19). The majority of the asbestos-containing material (ACM) is covered with concrete or asphalt (Ref. 1). However, significant amounts of the ACM may be available to this pathway through the deterioration of the asphalt and concrete (Ref. 1). ACM was observed deposited directly on the ground surface at previously sampled locations and other suspect locations, and the quantity of ACM at any one residence was estimated to be from 5 ft² to a maximum of 300 ft² (Ref. 1). A release of asbestos to the soil has been documented (Appendix A) (Ref. 1; Ref. 18).

3.4.1 Resident Threat Receptors

The site area investigated during the January 7, 1992 MK/ICF reconnaissance was limited to the neighborhood bounded by Barataria Boulevard, Westbank Expressway, Avenue A (Westwego) and 4th Street (Ref. 1). During the reconnaissance inspection, suspected ACM was identified in 117 out of 2,514 driveways and rights-of-way within the defined site area (Ref. 1). The average number of people within one household in Jefferson Parish according to the 1985 census is 2.74 which indicates that approximately 321 people reside within 200 feet of suspected ACM (Ref. 16, p. 30; Ref. 28). Seven schools have been identified within the site boundary with a student enrollment of 3,886 (Table 1) (Ref. 1; Ref. 12; Ref. 13). Two day-care centers also exist within the site boundary with a combined enrollment of 91 children (Ref. 1; Ref. 24; Ref. 25). It is not known if any of these schools or day-care centers contain or are within 200 feet of suspected ACM.

No terrestrial sensitive environments, commercial agriculture, silviculture or livestock production or grazing occurs on an area of observed contamination (Ref. 1).

3.4.2 Nearby Threat Receptors

The site which consists of a conglomeration of driveways and rights-of-way in a residential neighborhood is extremely accessible and has a very high frequency of use. The distance from observed contamination to the nearest individual or regularly occupied building (residence) is less than 200 feet (Ref. 1). The population within 0 to ¼ mile is approximately 7,999, ¼ to ½ mile is approximately 8,614 and ½ to 1 mile is approximately 15,140 (Ref. 23). This estimation does not include the 7,291 students that attend the nine schools within a 1-mile travel radius of the site (Table 1) (Ref. 12; Ref. 13). Also, this estimation does not include those schools and residents within the site boundary.

3.5 AIR

3.5.1 Air Pathway Characteristics

The majority of the ACM is contained with cement and other paving materials (Ref. 1). However, the condition of the containing material has, in many instances, deteriorated and become friable as shown in the photographs in Appendix A (Ref. 1).

TABLE 1

SCHOOL LOCATIONS AND ENROLLMENTS

Radius (Miles)	School	Enrollment
On-Site	Ames	310
	Butler	627
	Our Lady of Prompt Succor	440
	Pitre	846
	St. Joseph the Worker	284
	Westwego	492
	Worley Jr. High	887
	TOTAL	3,886
0 - ¼	Shaw High School	646
¼ - ½	Immaculate Conception Elementary	919
	Immaculate Conception High School	493
	Lincoln	607
	TOTAL	2,019
½ - 1	Ella Pittman	827
	Harvey	144
	L.W. Higgins High School	1,794
	Marrow Jr. High School	808
	St. Rosalie	1,053
	TOTAL	4,626
1 - 2	Academy of the Sacred Heart Elementary	432
	Academy of the Sacred Heart High School	203
	Bauduit	284
	Danniel School No. 1	357
	De La Salle High School	665
	Homedale	259
	John Ehret High School	2,808
	Live Oak	444
	Miller Wall	626
	St. Francis of Assisi	249
	St. Stephen	287
	West Jefferson High School	1,742
	Wright Jr. High School	655
	Xavier Preparatory School	482
	TOTAL	9,493
2 - 3	Allen	628
	Benjamin Franklin High School	786
	Bridge City	658
	Boulevard	151
	Douglass	302
	Estelle	917
	Fortier High School	1,199
	Gretna	715
	Gretna 2	189
	Gretna Jr. High School	1,077
	Harry Truman Jr. High	1,068
	Holy Ghost	283
	Lafton	793

TABLE 1

SCHOOL LOCATIONS AND ENROLLMENTS

Page 2

Radius (Miles)	School	Enrollment
2 - 3 (Continued)	Laurel	992
	Lewis	334
	Lily W. Ruppel	620
	Lourdes	399
	Loyola University	4,935
	Lusher	847
	McMain High School	1,321
	Mercy Academy	253
	Most Holy Name of Jesus	564
	St. Joan of Arc	281
	St. Joseph	220
	St. Matthew	639
	Tulane University	11,500
	Ursuline Academy	348
	Visitation of Our Lady	809
	Woodson Jr. High School	752
	TOTAL	33,580
3 - 4	Allen Ellender Jr. High School	1,110
	Booker T. Washington High School	1,006
	Catherine Strehle	367
	Chester	433
	Deckbar	55
	Guste	651
	Harahan	519
	Helen Cox Jr. High School	753
	Henry Ford Jr. High School	763
	Hoffman	318
	Jackson	315
	Janet	758
	Johnson	326
	Lafayette	728
	McDonogh No. 26	467
	Rabovin High	671
	Riverdale High	1,898
	Robert E. Lee	331
	St. Anthony	437
	St. Mary's High	849
	St. Michael	195
	St. Monica	235
	St. Rita	226
	St. Rita	378
	William Hart	400
	Williams	452
	Wilson	584
	Woodland West	884
	Woodmere	892
	TOTAL	17,001

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Asbestos fibers can be easily suspended in the atmosphere and may remain suspended for extended periods of time with minimal disturbance. Vehicles traveling over the material in driveways and rights-of-way are likely to facilitate a release to air. It is also possible that foot traffic from people accessing their vehicles and children playing in their yards could cause a release to air and possibly even track the asbestos into their homes.

3.5.2 Air Receptors

The distance from an area of observed contamination to the nearest individual is less than 200 feet (Ref. 1). There are 88 schools within 4 miles of the site (Table 1) (Ref. 1; Ref. 12; Ref. 13). The population located within: 0 to ¼ mile is 7,999, ¼ to ½ mile is 8,614, ½ to 1 mile is 15,140, 1 to 2 miles is 23,342, 2 to 3 miles is 32,604 and 3 to 4 miles is 41,081 (Ref. 1; Ref. 16; Ref. 23).

Commercial agriculture, silviculture and designated recreational areas do not exist within ½ mile of the site (Ref. 1). No parks or recreational areas were identified within ½-mile of the site, but may exist adjacent to the schools. Wetlands that are located within: ¼ to ½ mile are 290 acres, ½ to 1 mile are 725 acres, 1 to 2 miles are 4,400 acres, 2 to 3 miles are 4,285 acres and 3 to 4 miles are 6,650 acres (Ref. 6).

4.0 SUMMARY

The Westbank Asbestos site is the neighborhood surrounding the Johns-Manville (JM) plant in Marrero, Jefferson Parish, Louisiana (Figure 1). The site is comprised of numerous driveways and rights-of-way upon which an asbestos-containing waste material containing up to sixty percent asbestos has been laid. The geographical coordinates of the estimated boundaries of the site (Figure 1) are as follows:

Northwest	29°54'33"	90°08'45"	Northeast	29°53'55"	90°06'06"
Southwest	29°54'02"	90°09'32"	Southeast	29°53'40"	90°06'02"

The Johns-Manville facility is located on the west bank of the Mississippi River adjacent to New Orleans. Between 1955 and 1965, the plant produced various types of asbestos containing products with the principle product being asphalt roofing material. An asbestos containing material by-product was generated by the plant. The by-product, in aggregate form, was pulverized in a hammer mill and mixed with filler to form a stable roadbed-like material. The asbestos containing aggregate was offered to local residents for driveway construction at no charge (Ref 19, p. 2). Consequently, many driveways and rights-of-way in the surrounding neighborhood contain this waste material.

The area investigated during the January 7, 1992 MK/ICF reconnaissance was limited to the neighborhood bounded by Barataria Boulevard, Westbank Expressway, Avenue A (Westwego) and 4th Street. The actual site area may extend beyond these estimated boundaries.

A pathway of major concern is the air pathway because of the nature of asbestos. Although the sampling missions of the LDEQ and TAT did not document an observed release to air, the potential for a release is significant. The ACM in many cases is located less than 200 ft from local residences and is easily accessible to the public. This increases the chance that the ACM

might be disturbed which would cause the asbestos to become airborne and subsequently inhaled. It is the inhalation of asbestos which can be the most toxic. There are 88 schools located within a 4-mile radius of the site including seven schools and two day care centers located within the site boundary (Table 1).

Another pathway of concern is soil exposure because the ACM was observed to be in direct contact with the soil. During the on-site reconnaissance, 117 residences with suspect ACM within 200 feet were noted. The ACM is readily accessible to the public and therefore, the ACM is likely to be disturbed. There are almost 40,000 people within a 1-mile travel distance radius of the site including nine schools and two day cares.

Data gaps encountered during the investigation include:

- The amount of waste generated and donated to the surrounding neighborhoods;
- use of surface water from the 15-mile target distance for irrigation, commercial purposes, industrial purposes, recreation, or the watering of commercial livestock; and
- specific information about the fisheries along the 15-mile downstream target segment.

DOCUMENTATION LOG SHEET

SITE: WESTBANK ASBESTOS
IDENTIFICATION NUMBER: LAD985170711
CITY: MARRERO, WESTWEGO, and HARVEY
STATE: LOUISIANA

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
1	Memorandum. On-Site Reconnaissance. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: File. January 14, 1992. LAD985170711.
2	J.O. Snowden, W.C. Ward, and J.R.J. Studlick, the New Orleans Geological Society. "Geology of Greater New Orleans: Its Relationship to Land Subsidence and Flooding". February 1980, pp. 3, 11, 12.
3	Record of Communication. Westbank Intakes for Jefferson Parish. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: Ms. Bender, Secretary, Jefferson Parish Utility Administration. January 22, 1992. LAD985170711.
4	Record of Communication. Drainage Maps for Westbank Asbestos. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: Arthur Lefebvre, Jefferson Parish Public Works. February 4, 1992. LAD985170711.
5	Letter. Flood Hazard Evaluation. From: R.J. Kliebert, Chief, Plan Formulation Branch, New Orleans District Corps of Engineers. To: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. March 5, 1992. LAD985170711.
6	U.S. Department of the Interior, 7.5-minute National Wetlands Inventory Maps of Louisiana: New Orleans East, 1992; New Orleans West, 1992; Lake Cataouatche East, 1992; Bertrandville, 1992.
7	U.S. Environmental Protection Agency, Hazardous Site Evaluation Division. "Guidance for Performing Preliminary Assessments Under CERCLA". Publication 9345.0-01A. September 1991. pp. 44-51.
8	Letter. HRS Net Precipitation Values. From A.M. Platt, Group Leader, MITRE Corporation. To: Lucy Sibold, USEPA. May 26, 1988. Attachments.
9	U.S. Department of the Interior, Soil Conservation Service. "Soil Survey of Jefferson Parish, Louisiana". January 1983, pp. 1, 2, 3, 19, 20.

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- 10 Louisiana Department of Transportation and Development, Computerized Listing of Registered Water Wells and Holes. December 5, 1990.
- 11 Superfund Chemical Data Matrix. December 27, 1991.
- 12 Archdioceses of New Orleans, Office of Catholic Schools. "1991-1992 School Enrollments".
- 13 Jefferson Parish Public School System, Department of Planning. "Regional Student Enrollment Data". October 1, 1991.
- 14 U.S. Department of the Interior, Soil Conservation Service. "Soil Survey of Orleans Parish, Louisiana". September 1989, pp. 1, 2, 3.
- 15 Letter. Rare, Threatened, and Endangered Species Assessment. From: Gary D. Lester, Coordinator, Louisiana Natural Heritage Program. To: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. January 8, 1992. LAD985170711.
- 16 U.S. Department of Commerce, Bureau of the Census. "1980 Census of Population and Housing". Louisiana.
- 17 U.S. Geological Survey, 7.5-minute Topographic Maps of Louisiana: New Orleans East, 1989; New Orleans West, 1989; Lake Cataouatche East, 1982; Bertrandville, 1989.
- 18 Memorandum. Sampling of Westbank Area. From: Todd Thibodeaux, Environmental Quality Specialist, Louisiana Dept. of Environmental Quality. To: Harold Ethridge, Acting Administrator, Louisiana Dept. of Environmental Quality. January 21, 1990. LAD985170711.
- 19 U.S. Environmental Protection Agency, Technical Assistance Team. "Site Assessment Report for Westbank Asbestos, Marrero, Jefferson Parish, Louisiana". September 27, 1991, pp. 1, 2, 4, 5.
- 20 State of Louisiana, Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works. "Ground-Water Resources of the Greater New Orleans Area, Louisiana". Water Resources Bulletin No. 9. July 1966.
- 21 Louisiana Department of Transportation and Development. "Public Water Supplies in Louisiana: Volume 2: Southern Louisiana". Water Resources Basic Records Report No. 16. 1988, pp. 64, 65, 81.
- 22 D.M. Herschfield. "Rainfall Frequency Atlas of the United States". U.S. Weather Bureau Technical Paper No. 40. 1961.

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- 23 Memorandum. Population Calculations for Westbank Asbestos. From: B. Kendrick, Geologist, ICF Technology, Inc. To: File. June 8, 1992. LAD985170711.
- 24 Record of Communication.. Enrollment for Mrs. Paul's Day Nursery and School. From: B. Kendrick, Geologist, ICF Technology, Inc. To: Myron Cassagne, Director, Mrs. Paul's Day Nursery and School. June 8, 1992. LAD985170711.
- 25 Record of Communication. Enrollment for A-Bear's Day Care Center. From: B. Kendrick, Geologist, ICF Technology, Inc. To: Carrie Abair, owner, A-Bear's Day Care Center. June 8, 1992. LAD985170711.
- 26 Record of Communication. Eastbank Intakes for Jefferson Parish. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: Blain Elstrott, Plant Supervisor II, Jefferson Parish. January 22, 1992. LAD985170711.
- 27 Record of Communication. Surface Water Intakes for St. Bernard Parish. From: Kevin Jaynes, Environmental Scientist, ICF Technology, Inc. To: Jacob Groby, St. Bernard Parish Water and Sewer. January 7, 1992. LAD985170711.
- 28 Memorandum. Population Within 200 Feet of Asbestos. From: B. Kendrick, Geologist, ICF Technology, Inc. To: File. July 1, 1992. LAD985170711.
- 29 Memorandum. Calculations of Areal Extent of Asbestos Within the Site Boundary. From: B. Kendrick, Geologist, ICF Technology, Inc. To: File. July 18, 1992. LAD985170711.